DISCUSSION AND CORRESPONDENCE

THE POSITIVE ION IN ELECTRICAL DISCHARGE THROUGH GASES

WHEN a metal sphere is hung upon a silk cord between the terminals of a plate glass electric machine, it will oscillate to and fro between the terminals.

When molecules of a gas are placed in a similar position, they can not behave in quite the same fashion. No one molecule can plow its way through the swarm of molecules which surround it. They are all being urged to do this. At any instant some are being urged away from the positive terminal, and some from the negative. These opposing streams of gas mingle. The collisions which result between these overcharged and undercharged molecules within such a field of force result in a continual transfer of electrical corpuscles from molecule to molecule. In such a mixture we should at any instant expect to find three classes of molecules. Those which are negatively overcharged, those which are negatively undercharged, and those which are in normal condition.

Even in open air discharge, the repelled molecules move along streamers. In particular is this the case at and near the positive terminal. Here the corpuscles and air molecules are moving in opposite directions. In rarefied gas, where the mean free path is greatly increased, these streamers become "rays."

All of the properties of these rays are in harmony with what we should expect, from our knowledge of the behavior of the metal ball and the properties of gases.

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A NEW RECORD OF A CHESTNUT-TREE DISEASE IN MISSISSIPPI

PROFESSOR EUGENE HILGARD, of Berkeley, Cal., told me this summer of an observation of his which is of moment to those interested in the chestnut-bark disease.

While surveying in 1856 in the northeastern part of Mississippi, he found the chestnut trees of that region, both young and old, dead. They had been growing in a mixed forest of pine and oak and, as the other trees were in a healthy condition, were very noticeable. The dead trees were frequently of large proportions, attaining a height of 80 to 90 feet. When he saw them, these trees were beginning to decay; the bark was dropping off, leaving the trunks bare. There were no signs of insects. The region which was surveyed is a non-calcareous one.

As chestnuts are still growing in northeastern Mississippi, the epidemic which Professor Hilgard saw did not exterminate the tree in that region. It is another record of a devastating disease which the chestnut tree has endured.

Now that extra attention has been given to the chestnut and old records have been looked over, the struggle which this tree has had against attacks of fungi and of insects during the nineteenth century becomes apparent. There can hardly be a doubt but that the present range of this tree is much less extensive than formerly.

CAROLINE RUMBOLD

BLANDING'S TURTLE

TO THE EDITOR OF SCIENCE: Referring to Mr. Howe's note in SCIENCE of September 1, "Second Record for Blanding's Turtle in Concord, Mass.," and of the introduction of three pairs of the same species in Little Long Pond, Orange County, by Dr. Townsend, I beg leave to report finding this turtle at Queens, L. I., in June, 1909. It has been placed on the records of the Natural History Survey of Long Island now being made by the Brooklyn Institute of Arts and Sciences. This is the first report, so far as we know, of Blanding's turtle having been found on Long Island, but Abbott in "A Naturalist's Rambles about Home" mentions finding it in central New Jersey.

JOHN J. SCHOONHOVEN

THE MOTH OF THE COTTON WORM

TO THE EDITOR OF SCIENCE: In connection with the notices appearing in SCIENCE (October 16 and November 10) recording the occurrence far north of the moth of the cotton

worm (*Alabama argillacea* Hubn.), it may be worth while to place on record the fact that this insect has been very abundant in parts of the south this year. Here at least, and if one may judge from observations from a car window, in northern Alabama as well, the cotton has suffered also complete defoliation.

J. R. Watson

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Transplantation of Ovaries

To the Editor of Science: May I have space in your columns to say a few final words regarding the results of transplantation of ovaries?[1]

Professor Castle has objected to my application of the term mongrel to guinea-pigs used by him in experiments which he claims overthrow my results on chickens.[2] My authority for the use of this term is the following extracts from his paper.[3]

The ovaries were removed from an albino guinea-pig and in their stead were placed two ovaries, one from each of two black guinea-pigs. The female bearing the engrafted ovaries was subsequently bred to an albino male and of the resulting six young, all were black and red, and one had a white foot. In explanation of this white foot, it is stated that "*Spotting characterized the race from which the father came. He was himself born in a litter which contained spotted young. . . .*"[4] Therefore the male was a mongrel.[5]

[1] Science, N. S., 1911, XXXIII.

[2] Science, N. S., 1911, XXXIII.

[3] Publication No. 144, Carnegie Institution, pp. 9–10.

[4] Italics mine.

[5] In an article by Professor Castle appearing in *The Popular Science Monthly* under date of May, 1910, it is stated that in such an experiment six young resulted and they were "*all black*" (italics mine). From the data in my hands it is impossible to conclude whether this is the same experiment as that quoted above, and to which it bears a striking similarity. If it is the identical experiment, and this I assume in view of his more recent statement (Publication No. 144, Carnegie Institution, 1911, p. 8) that but two of his successfully operated animals had borne young, the article in *The Popular Science Monthly* must be inaccurate.

In the other instance, an albino female was spayed and her ovaries replaced by the ovaries of a brown-eyed cream guinea-pig. The albino female was then bred to an albino male and two albino and one brown-eyed cream offspring resulted. In attempting to explain this result, it is stated that "*albinism occurred as a recessive character in the particular brown-eyed cream stock used. . . .*"[4] So it follows that at least one of the females used in this experiment was a mongrel, and was therefore, as in the first experiment, entirely unsuited to furnish any reliable information from the standpoint of foster-mother influence.

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Moulting and Change of Color of Coat in Mice

Mr. C. C. Little has, in a recent number of Science (October 27, 1911), taken exception to certain statements that I made in an article on the inheritance of coat colors in mice. He believes that the unusual patterns that I have described, especially in black mice, which I attributed in part to a heterogeneous condition, are only temporary effects and are due to moulting. That the coat may appear spotted at times of moulting is too familiar to any one keeping these animals to call for comment. But that the patterns that I described are not due to this was shown by the fact, stated in my paper, that the fully grown hair was in all cases studied under the microscope and the pigments in the hair recorded. Moreover, the cases described were not incidental to the coat-changing period, for the pattern remained for several months until, in fact, a new moult appeared.

It is well known that black mice contain both black and chocolate in the hair, even when they produce only black mice. Hence the opportunity is furnished for the local excess of one or of the other pigment to become apparent. That such effects are due to some "physiological conditions" present at the time of moulting is very probable, and was mentioned in my paper. Furthermore, in